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to T.M.

Annotations Pertaining To Prehistoric Research In Tennessee

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Annotations Pertaining To Prehistoric Research In Tennessee

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ANNOTATIONS PERTAINING TO PREHISTORIC RESEARCH IN TENNESSEE

BY T. M. N. LEWIS

Less than two centuries ago the area now known as Tennessee was inhabited by diverse groups of people. When we compare their mode of living with that which we enjoy today we call it primitive, but perhaps they were obliged to think a bit faster and act a bit quicker than we moderns, because they lived constantly in grim conflict with the despotism of nature and with human enemies of their own kind. Perhaps, too, resourcefulness was a much more necessary human attribute than it is today. There existed that ever present human feeling of insecurity. To protect themselves against the enemy they went to no end of effort to hew logs and erect stockades around the villages, only to have them burned eventually by flaming arrows. Their villages were located in the river bottoms where the soil was fertile. In those days just as now the rivers went beyond their banks and inundated the villages, leaving a heavy deposit of silt upon them. These floods have occurred so often through the centuries that remains of prehistoric villages are found along the Tennessee River at a depth of eight or more feet below the surface.

In Yucatan, Peru and Mexico we witness the marks of great achievement. There the American Indian delved into mathematics and astronomy. He was a metallurgist of the first rank, even though he did confine his art chiefly to ornamental objects and implements of war. His failure to invent the wheel, a contrivance upon which our modern industrial age rests, limited his mechanical progress. Splendid highways were constructed, but only pedestrians were seen upon them. Textile, which connoisseurs avow have never been surpassed, were woven in Peru centuries ago, but the yarn was twisted by hand without the aid of the spinning wheel. Abundant evidence unearthed by archaeologists in Yucatan, the country which was at one time occupied by the powerful Mayan nation, attests to a very respectable knowledge of arts and sciences. Their calendrical system was superior to any of the contemporary systems of Europe. At Uxmal, the most powerful and artistic of their New Empire cities, there arose a civilization of vast splendor. This appears to have been the chief religious center. At the time the Spanish conquistadors arrived, this city, as well as the other minor religious centers, had already undergone severe dissolution.

Within the borders of Tennessee, principally along the banks of streams, are thousands of prehistoric habitation sites which have been occupied through the centuries by distinct groups, some of which appear to have had their ancestral origins in Middle America. These vanished

inhabitants have left no written records, but their material remains serve as a basis for deductions as to their daily existence and eventful careers.

WE INSPECT A "DIG"

At the head of Benham's Island in the Tennessee River, near Dayton, Tennessee, has stood for an unknown period of time an earthen mound of rather imposing size. Upon its level summit and sharply sloping sides a number of large trees had taken root, protecting it against erosion. Like all of the aboriginal earthworks of Tennessee, it had not escaped the shovel of the curio hunter, as was evidenced by several deep pits which had been dug down from its summit. Fortunately, however, its size was such that the pits had not resulted in any serious damage to the evidence which it contained; consequently it was selected in April, 1937, as a worthy object for investigation by the University of Tennessee.

The University has been assisted in its efforts to record the prehistory of the state by the several federal relief administrations, and upon the April morning a force of sixty WPA workers arrived at the site with axes and mattocks. After a brief interval, the mound, denuded of its aboreal protection and undergrowth, presented an even more imposing appearance. A camera lens was focused upon it and photographs were made of this earthen foundation which at one time had supported a town-house or temple building which overlooked the adjacent Indian village.

On the following morning the Tennessee Valley Authority's engineers arrived with their surveying instruments and proceeded to place stakes at ten foot intervals over the entire surface of the mound. Upon the level area adjacent to the mound appeared unmistakable signs of Indian habitation in the form of broken pottery, river shells, broken bones of wild animals and implements of stone and bone. A test pit was dug here and there to ascertain the depth of the black organic layer of soil which had accumulated upon the village area through the many years of its occupancy. The fact that most of the activities of the village had been carried on in the immediate vicinity of the earthwork was evidenced by the diminishing depth of this black deposit as the test pits were dug at greater distances from the mound. Since this black soil contained much significant material of an archaeological nature, a large section of the village area was likewise staked off in ten-foot squares. When the placement of these stakes was completed, a number was written upon each one of them and a corresponding miniature grid system was laid out on paper divided into mathematical squares. The purpose of this procedure was to enable the archaeologists to place the exact location of all find-spots and house floor patterns upon



A flat-topped earthenwork on Benham's Island at the confluence of the Hiwassee and Tennessee Rivers. This has been under investigation since the spring of 1937 and it is estimated that when the work is finished in the spring of 1938, approximately fifty house floor patterns will have been recorded. The mound was 22 feet high. In the first 18 inches of horizontal excavation were found objects of European origin, such as glass beads, brass bells and clay pipes. This would infer that the Cherokees were the last inhabitants to occupy the site. Lower levels have revealed architectural types belonging to two other prehistoric groups. A few burials were discovered in pits which had been dug into the surface of the mound. No burials were found which were inclusive to the mound structure. At a depth of 12 feet from the summit of the mound a sudden change occurred in the architectural design of the houses, as shown by the floor patterns. At the same time an abrupt change occurred in the conformation of the mound itself in that it became a truncated pyramid having a rectangular base.

the plats, which was to be accomplished by taking measurements from the stakes adjacent to the evidence.

To clarify further the records which the archaeologists were preparing to obtain, a high platform was erected near the mound to serve as a permanent station for a plane-table and an alidade, by means of which the vertical elevation of all evidence might be ascertained. To supplement the photographs which had been taken of the mound, a one-foot contour drawing was made of the entire mound with the aid of the alidade. The importance of such details is apparent when it is realized that in order to explore an earthwork or village site the soil formation and depositions must be disturbed by the archaeologist's shovel. In other words the archaeologist must destroy an archaeological site in order to investigate it. It, therefore, becomes his responsibility to produce a meticulous record, for obviously it is not possible to excavate the same earthwork or village site a second time, in the event it should be discovered that an inadequate record was obtained. Only when this record in the form of photographs, plats and written notes is scientifically accurate and complete, is it possible to reconstruct the history of a people who left no written records. The archaeologist working in Tennessee is obliged to deal almost exclusively with material remains, and when he has succeeded in building up a story, as reflected by material culture, he is then able to deduce numerous facts relating to the daily existence and important events of the people under investigation.

In charge of the investigation is a small staff of trained archaeologists, men who have chosen this field of research for a profession. They have pursued their studies in many parts of the country, and they have acquainted themselves with the findings of other investigators throughout the globe. To them it is a downright serious piece of business. Each staff member is responsible to the staff chief, who dictates the technical procedure to be employed and synthesizes the field records into a scientific report which is eventually published and made available to all interested students of prehistory. Every odd moment is given over to the reconstruction of pottery vessels, skeletal remains and other archaeological material. Each grain of evidence is the potential word of an unrecorded document. The words evolve into sentences, pages and volumes, and another contribution is made to human knowledge.

SIGNIFICANCE OF THE MOUNDS

Throughout the world and back through the centuries man has erected earthen monuments to the dead. Mounds of every size and shape, erected by human hands, have been observed in the United States, principally in the Mississippi Valley. The people responsible for their construction are frequently referred to as the "Mound Builders," with the

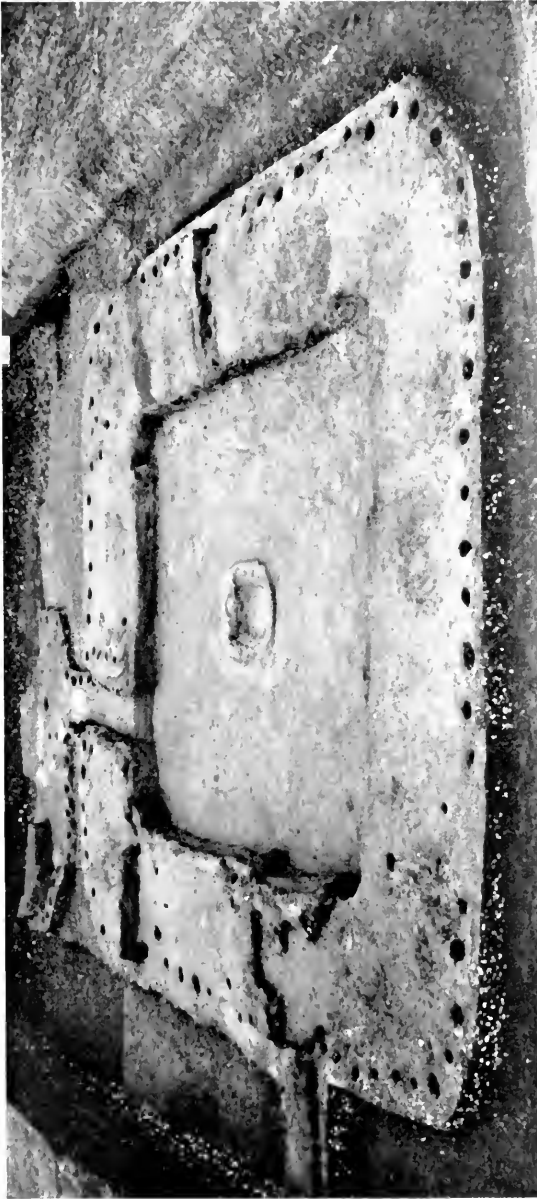
inference that they were a distinct race which preceded the American Indian of early historic times. This conception is erroneous, since the evidence uncovered by scientific investigators has shown conclusively that the mounds were constructed by the Indian groups which were ancestral to those that occupied this continent at the advent of the European peoples.

Many of the history textbooks used in the public schools still mention "Mound Builders" and infer that they were an ancient race of people who differed from the American Indian and about whom nothing is known. Much concerning early life in America has been brought to light and its interesting revelations are just as important a part of our historic background as the Declaration of Independence, since history is concerned with the beginnings and the growth of civilization. The historic horizon must be pushed back if coming generations are to be able to examine the minds of early Americans and perceive the nature of the forces which have frustrated man's ever instinctive urge to shape the world about him to his own ends. The splashing anchors of the *Nina*, *Santa Maria* and the *Pinta* do not herald the beginning of United States history. The threshold and the fireplace of the American who took up his abode in the southwestern part of the United States 10,000 or more years ago marks the beginning of United States history.

Until four years ago the mystery of the hundreds of large flat-topped earthenworks which were present in nearly every county of Tennessee was unsolved. Some of these approach a height of seventy-five or more feet and many bear a shape-resemblance to the flat-topped, stone-plated pyramids of Middle America which served as foundations for the temples of the civilized Indian groups which inhabited that area prior to the sixteen years of Spanish conquest. We know something about the latter structures because the Spanish historians have left us a brief account, and this is being supplemented from time to time by the archaeologists at work in the Middle American area. They desire not only to look farther into the minds of these early people, but also to learn why their great aims in the direction of progress reached a barrier and then suffered a decline and complete disintegration. What brought on this rapid decadence prior to the advent of the Spanish conquistadors? Why did such a powerful group fall before the plundering bands of warlike peoples? This is one of the problems which archaeologists are attempting to fathom. At one time it was believed that some natural force or tropical disease made them easy victims for the outlying tribes. During recent years careful analysis of the findings has shed a new light upon the causes of Mayan dissolution. It now appears that strife began within the nation itself, at a time when a tyrannical priesthood became overbearing. All of the large cities had evolved into strictly religious centers. Civil ceremonies became a part of religious ceremonies and the priesthood became the ruling class. A civil war broke out and a weak-

ened nation became the prey of the more warlike Toltec tribes. Recent findings seem to suggest that perhaps unscientific farming with its consequential erosion eliminated their main food sources, a condition which might easily have lent impetus to the internal revolt. Archaeological findings in Tennessee and the Southeast in general suggests that some of the immigrants may have found in this area a suitable place for habitation, as evidenced by the pyramidal earthworks and other forms of archaeological evidence which are analogous to Middle American culture traits.

Visibly speaking, the pyramidal type of earthwork is confined to the middle and western portions of Tennessee. In the eastern portion the truncated earthworks do not present the same conformation. Instead of having a rectangular base they are characterized by either a circular or an oval outline. But when an earthwork of the latter type which has not been deeply mutilated by cultivation is carefully excavated, the earlier stages of its construction are found to possess a pyramidal form. Nearly three years of excavation on a large scale in the East Tennessee area have revealed the fact that the Appalachian Valley and the Tennessee River were routes over which many and diverse groups of aboriginal people gained access to this area, creating what is probably one of the most difficult sectors in the United States from the standpoint of archaeological interpretation. Many of the truncated mounds which have been excavated have been found to contain cultural manifestations belonging to several distinct groups of people which occupied the sites consecutively. Burned remains of buildings, which are found beneath nature's blanket of humus upon these village sites, suggest that they may have been sacked and burned by hostile tribes and the sites re-occupied by the conquerors following the evacuation. Thereafter the mounds again served as elevated foundations for the temples of the victor, who increased their height and altered their conformation by the addition of more earth to the top and sides. We see, therefore, that the large earthwork had a very modest beginning and did not attain its present size within a year and probably not within a century. The first inhabitants erected a low earthen foundation for their temple, town-house, ceremonial house- call it what you will. Its roof was usually covered with a mixture of grass and puddled clay, which may have been burned on the top surface to make it resistant to rain. Eventually the structure collapsed or burned and moist soil was dumped upon the fallen remains and trampled down until a level floor for the new structure was obtained. Occasionally a series of these superposed floor levels, each bearing one or more structure patterns, are encountered a few inches apart. This procedure appears to have gone on for a number of years, when it was finally interrupted by the transporting of sufficient earth to increase the height of the foundation to either three or four or a greater number of feet above the old level. When this new level



Floor pattern of a ceremonial building which was found within an earthwork on the Tennessee River in Hamilton County. The small holes seen in the photograph are the hollow molds left by the decayed basal ends of the vertical wall posts. The floor of the building is seen at the bottom of the square pit within the four walls. In the center of the floor is a fireplace. Between the edges of the floor and the four walls is an elevated platform of clay. It is likely that this was covered with cane mats upon which sat the members of the council. A vestibule appears at the left on the same level as the platform. At the inner end of the vestibule was a small antechamber in which those who desired admittance may have been examined by the tiler. Another entrance is seen at the rear. At its outer end was the floor pattern of a small structure in which the chief and his retinue may have awaited the arrival of the council. On the right-hand platform are the remains of a partition which may have separated the office holders from the general assembly. The trench surrounding the walls was dug by the archaeologists for drainage purposes. The building was 22 feet square. Photograph taken from south.

had been completed, puddled clay was spread upon it to produce a smooth floor, and upon this they erected from one to four buildings, depending upon the size of the area. It was fitting that these important buildings should have occupied an ever increasing elevation above the abodes of the village beneath.

Another type of mound occurs throughout the state which is dome-shaped instead of truncated. It was erected as a monument to the dead which are buried within it. Like the truncated earthworks, these increased in size periodically as more burials were added and covered with earth. In height they do not normally exceed eight or ten feet and seldom possess a basal diameter in excess of fifty feet. They are almost without exception constructed of yellow clay which was compressed so firmly about the corpse that the acids generated by bacterial decomposition escaped dilution by rain water and reduced the bones to an extremely friable state. Occasionally the periphery of a mound of this type is bordered by stones.

PREHISTORIC TENNESSEE HOUSE TYPES

A marked difference exists between the ceremonial house architecture of the early groups of East Tennessee as compared to that of the later groups. In nearly every section of East Tennessee where the large flat-topped mound occurs, some of the latter have been excavated during the past four years. It has been found that the early group of people who began the erection of these mounds adhered to a similarity of architectural design to a rather striking degree. Let us examine the grounds for this statement; in other words let us see by what means the archaeologist is able to reconstruct these buildings from the scanty evidence which has survived the ravages of time, and thereby form such conclusions.

It has been previously stated in this paper that the floor patterns of the ceremonial houses occurred in superposition within the earthworks. These clay floors were consolidated by the tread of many feet over a period of time. It is not a difficult task, therefore, to separate the softer overlying earth in each instance without mutilating the floors. Of course this separation must be accomplished with reasonable care by means of trowels and whisk brooms, since heavier tools would result in damage to the floors. After being carefully trowelled the wall trenches of the building are found to conform to a rectangular pattern. The trenches are distinguishable by reason of the color of the soil which they contain. Upon examining the surface of these trenches we observe black circular patches, three or four inches in diameter, occurring at intervals of anywhere from four inches to twelve inches along the center of the trenches. They denote the long disintegrated basal ends of the vertical wall poles, and are always traceable to the bottom of the trench, which

is usually about two feet below the floor. Occasionally these molds are hollow and at other times they contain a section of the basal end of a cedar pole, the preservation of which is probably accountable to the lack of humic acids in the soil, or to the fact that they were partially carbonized during the burning of the building. Further inspection of these wall trenches discloses the fact that while the vertical saplings were held in position in the trenches, smaller saplings were laid in between the outer trench walls and the basal ends of the vertical saplings to serve as wedges. Soil was then tamped into the trenches to within six inches of the top, at which level additional saplings were laid in the trenches between the inner walls and the vertical saplings, following which the trench was filled with soil to the floor level. Obviously this arrangement of wedges indicates the direction of the stress which the builders intended to overcome. The upper ends of the limber saplings were then pulled inward from the opposite walls and their ends bound together to form a dome-shaped roof. The wedges served to hold the basal ends of the saplings in a vertical position. It will be observed that when the small ends of the saplings had been pulled inward from the four walls and bound together, a dome-shaped roof would result, with a network of poles crossing each other at right angles. There is indication also that after binding the ends of two opposing poles of the side walls, the ends of two opposing poles from the end walls were bound; then two poles from the side walls were bent over and bound, and again two poles from the end walls. The weaving of the poles in this manner resulted in a rather sturdy roof construction.

Occasionally the charred remains of the structures are found upon the clay floors and careful inspection demonstrates that a thatching of grass was placed upon the roof. To this was added a layer of wet clay several inches in thickness, which appears to have been sufficiently moist in many instances to have partially penetrated the thatching. This clay addition served a dual purpose, namely, to prevent destruction of the thatch by wind and rain and to protect it from ignition by sparks from the fireplace. In spite of these precautions the structures were frequently destroyed by fire, whether accidentally or in accordance with religious edicts is not known. During the conflagration, the heavy, soil-laden roof was obviously the first part of the structure to collapse, and sections of partially consumed roofs were smothered by the overlying clay and converted into carbon. Occasionally sections of the walls also became buried beneath the roof clay and the preserved carbonized remains reveal that the vertically placed wall saplings were reinforced by others bound to them at right angles with strips of bark or other material. To this framework were secured mats composed of split or whole cane and grass. Centrally located upon the consolidated clay floor is a fireplace or altar which was molded from moist clay. It is usually square or rectangular in outline, having an area of about nine square

feet and projecting above the floor to a height of five or six inches. In the center of this fireplace is a deep, circular basin which contained the fire. In a few instances shallow basins have also occurred in each of the four corners. Occasionally the builders deviated from the rectangular fireplace pattern to one of circular outline having a molded clay rim surrounding the firebasin.

The consolidated clay floors of these ceremonial houses are often extremely hard and appear to have been made from puddled clay surfaced with crude trowels of stone. The dimensions of the buildings, as indicated by wall trenches, vary from 25' by 25' to 50' by 60'. Careful examination of the floors also reveals the former presence of furniture which was constructed by setting poles in holes dug down into the floor. Other larger post-molds suggest the presence of vertical posts which served as roof supports. A hole in the roof directly over the fireplace answered the purpose of a chimney, and its surfaces were probably plastered with clay as a protective measure against sparks from the fire. A few early historians who had occasion to inspect some of these ceremonial houses inform us that they were filled with a dense smoke during the winter season and that the only opening through which the light of day had access was through the very small chimney hole, which necessarily had to be small in order that the flame of the perpetual fire might not be extinguished by the rain. At the edge of the floor a seat of clay is sometimes found and it is assumed that the chief or other presiding elder occupied this elevated station during the ceremonies, while the members of the council sat in cross-legged fashion upon the floor mats, the impressions of which are sometimes visible upon the clay floors. A British officer, Lt. Timberlake, visited several Indian villages during the eighteenth century and made the observation that some of the ceremonial houses were completely covered with earth. A few examples of this have come to light during the course of the recent investigations in East Tennessee.

Whether the groups of people responsible for the type of architecture last described moved out of the East Tennessee area of their own free will and accord, or whether they were driven out by a more powerful people, is not yet apparent. The fact, however, that their villages were abandoned and reoccupied by another group is obvious, since the architectural remains which occur in the upper levels of the mounds are at variance with those which occur in the lower levels and which have just been described. It was customary for the later groups to employ much larger posts in the construction of their ceremonial buildings. Individual holes were dug for each post instead of trenches, and the posts were much too thick and rigid to have been bent. It is probable, therefore, that forked poles were used and the roof beams seated in the crotches. The fireplaces associated with this type of struc-



One of the 279 burials uncovered in a village site on the Tennessee River in Hamilton County. The individual represented is a female seventeen years of age. Upon the pelvis is a polished stone rattle, an implement which served a number of uses. Upon the neck is an incised gorget seven inches in diameter and made from a large marine conch shell. Immediately beneath this was another smaller gorget. In life they were worn from the neck as ornaments. To the right of the gorget and touching the skull is a hairpin made from the columella of a marine univalve shell, similar to that from which the gorget discs were cut. They were probably inserted in a coil of hair over each ear. At the right of the skull lies a pottery vessel having a spout projecting from its rim. In the background is a large, broken water bottle. On the upper right arm lie the remains of several rattles made from turtle carapaces. Each one of the rattles consisted of two of the upper shells of the turtle bound together and filled with teeth of the drum fish. The rattles were secured to the arm, presumably during ceremonial dances.

ture are never rectangular in outline, but always circular. The floors are extremely rough as compared to the smooth level floors so often characteristic of the earlier architectural remains. In fact, the entire architectural complex of the later groups has a far more primitive aspect than the well constructed houses of their antecedents. Floor patterns of circular rotundas approximating fifty feet in diameter have also occurred in the upper levels. It has been said of the Chickasaws that it was customary to hold their ceremonies in a rectangular house in summer and in a rotunda in winter, and it is possible that a similar custom was practiced by an earlier group which inhabited East Tennessee.

In the village site area adjacent to these mounds only an occasional symmetrical floor pattern of a four-walled house is found. The usual arrangement of post-molds in the village sites suggests that the major portion of the populace lived in crude shelters. The irregular positions of the molds left by the decayed vertical posts of these shelters fail to reveal either their size or form. The yellow subsoil of a village site is generally dotted with post-molds in great abundance, and it is impossible to determine which were associated with actual shelters. One particular village site contained a large number of symmetrical, square floor patterns of dwelling houses, each one of which had been dug down below the ground level to the depth of the clay subsoil. The purpose of this procedure was undoubtedly to remove the soft humus and gain the advantage of a hard clay floor. Each one of these structure patterns was further characterized by what may have been a narrow vestibule entrance which extended outward from one of the walls for a distance of about three feet. The presence of burned timbers suggested that the village had been destroyed by fire and probably abandoned, for upon the floors and beneath the roof clay which had fallen upon them, were the implements and pottery vessels of the former occupants. Rectangular, depressed floor patterns have occurred on other sites, but never more than two or three have been discovered. The average sized four-walled dwelling house was about fifteen feet square and it is quite probable that each one accommodated quite a large family. The cane and grass thatching, of which the walls were composed, was a constant fire hazard, for there is ample evidence of frequent conflagration. When the houses were leveled by fire, the inhabitants very often reconstructed them upon the same spot, since frequently two or three floor levels are apparent and the corresponding number of post-mold wall patterns. Each time a house burned, new holes were dug for the wall posts, and these rectangular patterns of post-molds intersect each other. Fireplaces associated with each one of the consecutively built houses are also found in close proximity and on slightly different levels. The fact that the floors of the houses built upon the same spot are superposed is accountable to the falling of the roof clay upon the floors as the houses burned.



A large ceremonial house pattern discovered upon one of the lower levels of a mound located on Bonham's Island in the Tennessee River near Dayton. This occurred about fifteen feet below the summit of the mound. The building was thirty-eight feet in width by fifty-six feet in length. Upon the center of the floor two rectangular altars or fireplaces are seen. Near them are two rather deep pits which originated on this floor level. Their significance was not apparent. Along the left-hand wall is a seat of clay. The entrance to the building appears at the corner just beyond the seat. It was indicated by a narrow gap in the wall and by several stone slabs imbedded in the clay floor. The wall trenches containing the hollow post-molds were partially excavated in order to make them apparent in the photograph. To the rear of the large floor pattern are patterns of two smaller buildings. Upon the floor of the right-hand pattern are seen some of the burned remains. Charred posts and cane were also present upon the floor of the larger structure, but were removed prior to the making of this photograph. Six inches below this level the patterns of four more houses were discovered. Photo from northeast.

In the Middle Tennessee area may be seen along the banks of streams numerous earthworks known as house circles or hut rings. They have the appearance of a ring of earth approximately twenty feet in diameter and varying from twelve inches to twenty-four inches in height. Obviously these do not occur in plowed fields, since a few years of cultivation would entirely eradicate them. There still remain many wooded sections along the Duck, Harpeth, Buffalo and Cumberland Rivers, and in some of these locations the house circles are still very much in evidence. A number of these have been carefully excavated by the University's investigators, and in every instance they were discovered to contain rectangular post-mold patterns of dwelling houses. Small saplings were used in the walls, the basal ends being set in trenches. It is highly probable that these saplings were bent inward to form the roof, as in the case of the early type of ceremonial structures of East Tennessee, which have been previously described. The rings of earth were apparently formed by the banking of soil against the outside walls, and since the corners of these buildings were rounded, as evidenced by the post-mold patterns, the resulting embankment tended to be circular. In some instances these floor patterns occurred in superposition.

The ceremonial houses constructed by these people were both circular and rectangular in outline. In the larger villages, which may have been religious centers, the ceremonial houses were erected upon earthworks having pyramidal conformations with the ramps leading to the summits from the east and west sides. Excavations at one particular site on the Harpeth River revealed that the aboriginal populace had shifted the earth from the upper portions of a sizeable hill in order to build a level plaza, terraces on the slope of the hill and pyramidal mounds on the top of the hill.

BURIAL CUSTOMS

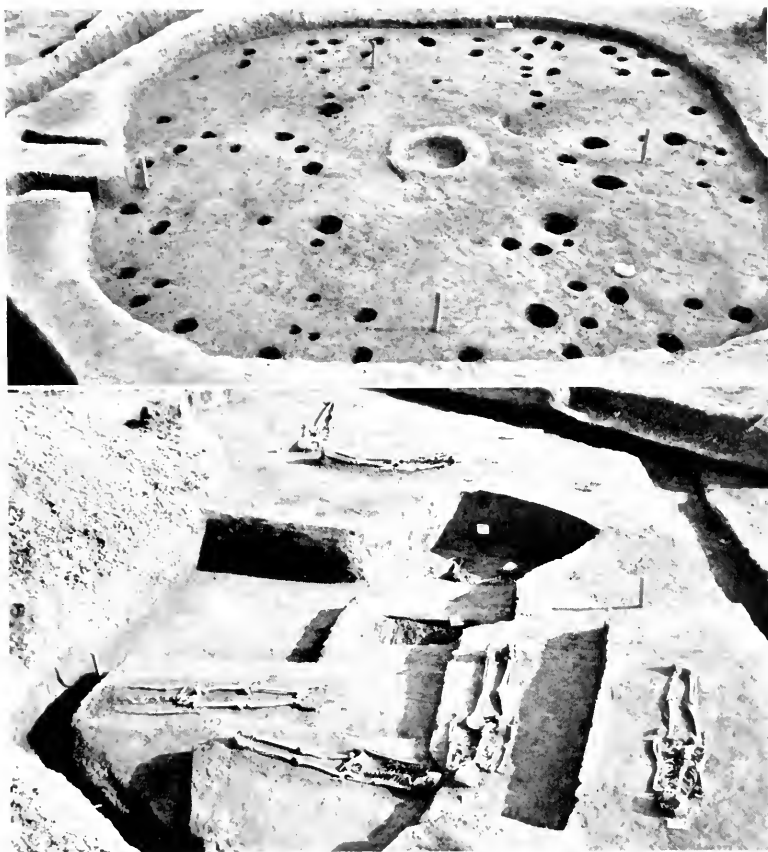
In the middle and western portions of Tennessee the prehistoric groups interred their dead in cemeteries, usually in oblong boxes made of flat limestone or shale slabs. The dimensions of the stone cists conform to the stature of the individual corpses contained within them. The slabs were broken into suitable sizes by means of stone hammers. When the bottom, sides and ends had been placed in position, the corpse was deposited in the resulting box in a fully extended position upon its back. Cover slabs were then placed upon the top and the cist covered with earth. During the years which have ensued, the majority of the cists have become filled with earth, since they were seldom constructed with such precision as to prevent the infiltration of soil-laden rain water. In many instances the gaps were sufficiently large to admit rodents which disturbed the anatomical position of the bones and frequently gnawed upon them. The shallow depth of soil which was placed

over the stone boxes has in many instances been eroded, thus revealing their presence to relic hunters who have torn up thousands of them in the hope of finding clay vessels and other objects, not realizing that in so doing they were inflicting an irrevocable loss upon the state's prehistory.

In the eastern section of the state stone cist graves occur only occasionally. In that area it was customary to inter the dead haphazardly throughout the village and occasionally beneath the floors of houses. Into shallow pits of small dimension the bodies were deposited. Before rigor mortis occurred, the legs were bent at the hips and knees and the corpse enveloped in bark or other material and placed in the pit. The deceased individual's closest possessions, such as jewelry, pottery vessels and implements, were frequently interred with the body. An occasional secondary or bundle burial is encountered, in which some of the bones are lacking and the balance disarticulated. In such instances the assumption is that the individuals died while absent from the village and at some later date a major portion of the disintegrated body or skeleton was wrapped in a bundle by a relative and returned to the village for burial. A few instances of cremated burials have also occurred, the significance of which is unknown.

It is customary to place the houses and shelters in close proximity to each other in these ancient villages, and grave markers, if such were used, might easily have been dislodged, since numerous instances occur in which the bones of earlier burials were disturbed by later burial pits. It must have been rather disconcerting upon such occasions to discover that the ornaments and implements deposited with the earlier burial had not departed for the "happy hunting grounds" along with the owner. On the other hand, it is quite likely that the earlier groups upheld religious beliefs similar to that of the historic groups, namely the metempsychosis of the spirit of both body and possessions. Frequently unfinished objects and the working tools used in their manufacture are associated with the burials. At other times an object appears to have been deliberately broken in order to "kill" it and thereby relinquish its spirit, that it might depart with that of its owner.

That there was either much contact with the peoples farther to the north and south, or excursions in those directions, is apparent from the vast abundance of ornamental objects made from marine shells, and implements and ornaments made from native copper produced from the mines of the Lake Superior region. Shell disks, often six or seven inches in diameter and cut from large marine univalve shells, have been frequently found in graves of females in a position to indicate that they had been worn from the neck. Upon these shell gorgets the aboriginal artist engraved in a most skillful manner with sharp flint well proportioned designs which are often paragons of symmetry. These depict



The upper photograph illustrates a dwelling house floor pattern typical of a large number uncovered on a prehistoric site located on the Hiwassee River in Bradley County. The aborigines excavated a shallow pit into the subsoil and set wall posts in a vertical position around the edges of the pit. Other holes within the walls probably contained posts which supported the roof and various items of furniture. The circular pit in the center is the fireplace. At the left are two trenches which contained the poles of a vestibule entrance.

In the lower photograph are seen some of the burials which were discovered near the floor patterns.

fighting and dancing human figures in elaborate ceremonial regalia, zoomorphic representations of the rattle-snake, spider and turkey, and various geometric motifs. One marvels at the comparative crudity of the design patterns which appear upon the surface of pottery vessels belonging to these same people.

The industrious nature of primitive Tennessee man is attested by the patience and skill embodied in the thin, narrow blades of flint, which sometimes reach a length of over twenty inches. Occasionally an ambitious individual fashioned a tomahawk, both handle and blade, from a single piece of stone and polished the entire specimen to the smoothness of glass. As many as 15,000 shell beads have been found in association with a single skeleton. To make a globular bead the size of a small pea from a flat piece of shell with no tools other than sandstone and flint, not to mention the drilling of the hole, would require hours. While only an occasional fragment of textile has been preserved by the salts set free from adjacent objects of copper, there is ample evidence to indicate that woven textiles were used extensively. The women pottery makers often impressed the soft surface of the molded vessel with a woven garment or blanket before placing it in the fire to harden. Careful scrutiny of these impressions indicates a great variety of weaving techniques.

Still another example of the ultra in human patience is exhibited in the form of a dug-out canoe thirty-four feet in length, which was recovered from an old barn on the Tennessee River and presented to the University. It was fashioned from a poplar tree by alternately burning and chiseling with stone implements. Its sides are vertical and about two inches in thickness from top to bottom, with no discernible variation in thickness from bow to stern. The dug-out was recovered from the river in 1798.

Seldom did an individual reach senility in those days. From skeletal studies made thus far it has been learned that about fifty per cent succumbed before reaching the age of seven and few attained the fifty mark. The frontal and occipital bones of the skulls of females and an occasional male frequently exhibit artificial flattening. This was accomplished during infancy by binding the head to a cradle board and placing a sand bag upon the forehead. The resulting cranial deformation was probably intended to increase the individual's fascination for the opposite sex. In spite of the numerous allusions which have been made to tribes of prehistoric giants and dwarfs, none such have been discovered and probably never will be. The average male individual seldom attained a height of more than 5'6". Out of hundreds of skeletons awaiting further study in the University laboratories, only one represents a male who approximated six feet in height. No dwarf is among the collection. The teeth of an occasional individual are free from caries, but in gener-



In the upper illustration are two objects which occurred with a burial discovered in a domiciliary earthwork in the East Tennessee area. The monolithic ax is made from a single piece of greenstone. The lower implement, also of stone, is a rather unique form and bears a heavy, brown incrustation suggestive of iron rust.

In the lower illustration are shown several forms of blades made from indurated shale. They occurred in burial mounds and upon house floors in Humphreys County.

al the early inhabitants of Tennessee suffered from dental ills almost to the same degree as do we moderns. The grit contained in corn ground in stone mortars with stone pestles, and the softening of sinews by chewing, hastened dental attrition, but at the same time polished the dental surfaces and arrested decay to some degree.

EXCAVATING TECHNIQUES

Like scientists in other fields, the archaeologist has spent years learning where to look, what to look for and how to look. The interesting objects which he finds do not possess any monetary value so far as he is concerned, but rather enable him to find an answer to the problem he has set out to solve. These objects, along with architectural manifestations and skeleton remains, enable him to acquire the same sort of information which historians derive from documents and manuscripts. The aim of both history and archaeology is to recover and preserve the story of man's past throughout the earth and throughout the ages, for history and archaeology taken together explain how human life came to be what it is today.

To achieve a record which is scientifically accurate, the excavating procedure employed by the investigator must necessarily conform to a system of carefully devised techniques which will withstand the severe scrutiny of his colleagues, in order that his findings may receive the stamp of authenticity. Since the same sites were often occupied by successive groups, there is need for extreme caution in the separation of the material remains belonging to each group. Unfortunately, human occupation does not always result in an even layer of deposit over a habitation site, for the reason that surface soil was often used to construct the earthworks. The plow frequently intermingles the evidence of an earlier layer of human deposit with that of a later layer and erosion may reverse the superposition of layers in some sections of a village site. In this same connection it is not logical to presume that the crudest remains are the oldest, for products having a more primitive appearance are often the result of cultural degeneration and are much later than objects which suggest a much higher cultural achievement. Thus, chronological sequence or relative age of occupation of the various sections of Tennessee by diverse prehistoric groups cannot be based upon the result of a more or less superficial observation, but must rather ensue the extensive investigation of numerous sites, in order that recurring conditions may be indisputably established.

It will be recognized that the phase of archaeological research which is concerned with the excavation of sites is strictly an engineering problem in which instruments are employed for the purpose of accurately recording the locations of all manifestations. In order that the latter may be recognized it is necessary that trained observers dictate the mode

of procedure and round out an organization in which every individual is assigned duties commensurate with his natural ability. Accordingly, those laborers who prove themselves to be above the average are elevated to the rank of foremen and subforemen. To these individuals is allotted the responsibility of taking measurements, clearing the earth from burials and other archaeological features, and preventing the mutilation of evidence by a workman's mattock or shovel. These foremen are the key men on each crew and they develop considerable skill. They are trained intensively by the staff to recognize evidence when it is brought to light by a workman's shovel.

All materials of an archaeological nature which are encountered in each ten-foot square of the grid system are placed in paper sacks bearing data as to specimen number and location. Where evidence of successive occupation of different groups of people is apparent in a village site or in an earthwork, the sacks are also designated as to level in which the contents occur. When burials have been cleared and photographed in situ the bones are carefully packed in cartons, labelled and conveyed to the laboratory for cleaning, reconstructing and study. Frequently charred sections of house beams are recovered and these are wrapped tightly in cheesecloth, dried and saturated with a hot solution of paraffin and gasoline and laid aside for future tree ring studies. The purpose of these studies is to establish the dates upon which the trees were cut and used by the aboriginal builders in the construction of their houses. In order to date the archaeological wood specimens it is necessary first of all to establish a master tree ring chart for the particular dating area. This is accomplished by the charting of the rainfall record as registered in the rings of living trees. For this purpose only those trees which grow on high elevations are employed, since they reflect the years of drought and heavy rainfall to a far greater degree than the trees of the lowlands whose roots have access to a more or less uniform supply of moisture. Gnarled cedars which have taken root upon rocky eminences occasionally show 500 or 600 year rings. It is possible that some of the archaeological wood specimens may antedate a chart derived from our oldest cedars, but it is not impractical to assume that some of the archaeological specimens might tie in with the first years of the master chart and thus extend its scope back through the centuries.

DISCOVERY ONLY A MEANS TO AN END

Upon completing the exploration of a habitation site and its associated earthworks, a vast accumulation of specimens and recorded data must be subjected to exhaustive analysis and interpretation. Formerly emphasis in archaeology was placed upon the specimens. They were exhibited attractively in museum cases merely to demonstrate the nature of the ornaments and utensils which were used by the first Americans.



The tobacco pipes in the upper illustration are of stone. All but the lower, centrally located specimen have occurred as grave furniture. The one which represents a sitting human figure was found upon the floor of a ceremonial house.

In the lower illustration are types of shell gorgets which occur as grave furniture chiefly in the East Tennessee area. These were worn about the necks of women and children and were cut from large marine shells. The upper left and central specimens bear an incised spider design; the one at the upper right depicts two turkey cocks perched upon the horizontal bar of a cross. The motif is highly conventionalized. In the lower left corner, two human figures in combat are depicted. They are adorned with eagle regalia and wear deer antler head-dresses. One of the hands of each individual grasps a long flint knife.

Then gradually the emphasis shifted from mere objects to the interpretation of these objects, until finally the museum is evolving from a repository for curios into an institution for visual education.

The term "museum piece," which was formerly applied to finely preserved and beautiful specimens, has gone into the discard, since a specimen is valuable only with respect to the light which it is capable of throwing upon the lives of people who made and used it. A crude specimen may often reveal more important facts than a handsome one. The same shifting of emphasis has also begun to reflect itself upon excavation procedure. Formerly only earthworks were excavated and adjacent village sites left unexplored. Obviously such results would fail to present a cross-section of the village life as a whole. By reason of the rapid development in excavation techniques during recent years it is now possible to obtain much more important information from a village site excavation than from an earthwork excavation. The latter is quite apt to yield information pertaining only to the ceremonial life of the village and the examination of results might lead to erroneous interpretations. Furthermore the earthworks were frequently constructed from soil gathered from the surface of the adjacent village site which may have been inhabited by several entirely different cultural groups which succeeded one another. The mound-fill would therefore contain broken pottery and other material remains belonging to the several groups, and the resulting analyses would be erroneous. On the other hand, the excavation of a village site which had not been seriously disturbed by cultivation and erosion could reveal the superposed strata of cultural remains deposited by the successive occupants of the site and thereby enable the investigator to effect a separation of the culture-indicative materials belonging to the several groups.

Through an analytical study of these materials, of architectural design and burial customs, of skeletal measurements and numerous other criteria, it is possible to determine the particular area occupied by distinct cultural groups, their movements from one part of the country to another, the origin of specific cultural groups, the rise and decline or genetics of cultures, and their chronological ranking. Through such procedures it eventually becomes possible to elucidate the history of vanished prehistoric groups.

During four years of continuous and extensive excavations in the Tennessee area, thousands upon thousands of archaeological specimens have been recovered. Many broken objects must be mended and all must be catalogued before the studies are undertaken. Mineralogical determinations must be made: vegetal substances must be identified, as well as shell and the bones of fishes and animals. Hundreds of photographs and drawings must be made. Thousands of pages of field notes and plats must be reviewed for the bearing which they have upon the



Effigy water bottles are of rare occurrence in the Tennessee area. They are made of pottery clay and bear surface designs painted in red. The two specimens occurred with burials in an earthenware of the domestic type.

materials. And finally before the report is written, all findings must be compared with those of other scientific investigators in order that earlier conclusions may be corroborated or disproven.

MAN'S TRIUMPHS AND FAILURES BROUGHT TO LIGHT

The practical person might ask why time and money should be spent in an effort to unveil the story of man's past. He will admit that unquestionably a spontaneous interest exists in the minds of the majority, but, he argues, the motive which prompts that interest is largely curiosity.

Simply stated, archaeology is the study of the unwritten past, in so far as it pertains to man and his works. Only a brief portion of the past can be reconstructed from written historical documents. In the knowledge that modern man and his ancestors have existed upon the earth for more than 5,000,000 years, and in the face of a very abbreviated record pertaining to a portion of mankind during the past 5,000 years, we are obliged to confess that we know too little about him to understand the mysterious forces which have toppled civilizations one by one and which even now are thrusting obstinately at our Euro-American civilization.

There has been much recent talk concerning overdevelopment in many scientific fields, as compared to the field of social science, in which archaeology is included. Man has progressed far in his effort to harness nature's forces to serve his will, but he has neglected to investigate himself, not the individual so much as the group, nation or race of individuals. Today we Americans witness in the United States a great deal of social experimentation of the trial and error variety. The analytical student of history and prehistory who scrutinizes the historical pageant in which man has acted down through the ages, is aware of the erratic means whereby nations have striven to accomplish social security, only to discover sooner or later that they have preoccupied themselves with what is purely a by-product of human existence. If humanity is ever to be guided by a more highly rationalized behavior and avert the tragic cycles of civilization, there must needs be a clearer insight into the complexness of national life. This demands scientific analysis of national cultures and their past development. In this connection archaeology and its related sciences hold the magnifying glass before our short-sighted social eyes which apparently have lost their perspective.

Every business depression we experience is, according to the press, the world's worst, and yet they have recurred and recurred everywhere on the face of the globe as far into the past as we have any knowledge. Today we blame it on the government, capital and Wall Street. From the ancient ruins of western Asia the archaeologist has recovered hundreds of thousands of clay tablets bearing cuneiform inscriptions, many of which are accounts of commercial transactions. They reflect the rise and fall of prices during a period of 3,000 years. *The student of*

archaeology can state advisedly that there is nothing so good for a case of depression jitters as a knowledge of the revelations brought to light by archaeology. In fact we might venture the suggestion that the contagious jitters which brought on the last panic and depression might have been averted if financiers had been better acquainted with historical economics.

The great intellects of the past and present have been concerned with the problem of combatting the hostile forces of nature; they have been concerned with the mechanization of existence and with the inventions of war machines, but none have ever turned their talents seriously to the greatest paradox of civilization—the glaring fact that man himself is man's greatest enemy. Perhaps history and prehistory have not supplied all of the factual matter needed in connection with such a difficult analysis, for we must bear in mind that the documents of early historians, such as Herodotus, are subjective treatises and are known to be ambiguous. Enough has been brought to light by prehistorians, however, to prompt us to regard the rise and fall of the great world civilizations as aspects of a continuous pageant, rather than to treat individual civilizations as separate historical departments. When we have examined this pageant of errors critically, we can only conclude that man is as ignorant today as he was in the days of the Pharaohs of the social and economic forces which have so perniciously upset the balance of civilizations through the millenniums. Upon close analysis we observe that at the peak of democracy civilizations enjoyed their greatest progress and tranquillity. Close upon the heels of democracy we detect the tidal wave of mysterious forces swooping down upon it, and engendering internal strife, militarism, and finally dissolution.

While nature's forces have been extremely devastating they have in no instance contributed in any way whatsoever to the downfall of great world civilizations. Human folly alone is responsible for the insecurity of civilization. Insecurity which results from class, tribal, national and racial animosity is definitely based upon man's ignorance and inability to analyze his self-made predicaments.

THE INDIAN'S ROLE IN THE MARCH OF CIVILIZATION

While the focal points for the great dissolved civilizations of the Western Hemisphere are in Middle and South America, we are obliged to carry our investigations into the outlying areas in order to complete the picture of a remarkable group of people which contributed much to the world in which we live. It is not generally known, for instance, that during a long period of time the American Indian domesticated many of the foods which today are the chief sources of wealth in the agricultural areas throughout the world. Among these are the sweet and Irish potato, corn, peanut, tomato, bean, squash, and other plants such as tobacco.

Within the borders of Tennessee is a vast abundance of archaeological remains. There has come little or no appreciation upon the part of its citizens for this interesting natural resource, obviously because there has been no education along these lines. The interest has been confined to a few individuals, many of whom have torn up the graves and earth-works in order to obtain relics and benefit from their sale. These individuals are unwittingly destroying a legacy in the form of prehistory which rightfully belongs to all of the citizens of the state, and the pressure of public sentiment should be brought to bear upon the situation without delay. When these archaeological objects are removed from the ground by trained investigators, they become words of a historical document. When they are removed by curio collectors who are unacquainted with the techniques of scientific research, the record of the document is irrevocably destroyed, and the objects are without meaning.

ACCOMPLISHMENTS TO DATE AND FUTURE PLANS

In January, 1934, the Tennessee Valley Authority assumed the sponsorship of an extensive archaeological investigation in the Norris Dam reservoir. Upon the completion of this investigation in July of the same year, the sponsorship was assumed by the University of Tennessee. Since that time work has been performed in the counties of Jefferson, Roane, Humphreys, Cheatham, Davidson, Hamilton, Bradley, Rhea and Meigs. A mass of information has been assembled. A portion of this is to be published by the Tennessee Valley Authority and the rest by the University of Tennessee when funds are available for that purpose.

Since all of the archaeological materials assembled at the University during the past four years have been recovered under thoroughly scientific conditions, the collection may be regarded as rather unique from the educational aspect. When a museum building is made available for the display of this material it will be possible to present an enlightening picture of the manner of living practiced by the prehistoric Indian groups of early Tennessee.

The visual education which such a museum could offer would indeed incite reflection. The complete pageant of man's upward march to that social status which we call civilization has been enacted upon the soil of Tennessee. That we now live in the light of the past is partially correct, for man has striven through the ages to gain his present vantage. Each succeeding generation has witnessed an increasing benefit, except in the control of the forces which have always beset the cross-roads of human relationships. Perhaps eventually these forces which have subjected the peoples of the earth from time immemorial to the ever present yoke of insecurity will be recognized in the light of the revelations of history and archaeology.



